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2014 MICHIGAN BLACK BEAR HUNTER SURVEY

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ABSTRACT

We contacted a random sample of bear hunters after the 2014 hunting season to determine hunter participation, hunting methods, bear harvest, and hunter satisfaction. In 2014, an estimated 5,500 hunters spent nearly 37,257 days afield and harvested about 1,552 bears. The number of hunters and hunting effort declined significantly from 2013 and 2014, but bear harvest was not significantly changed. Statewide, 28% of hunters harvested a bear in 2014, which was the same as in 2013. The average number of days required to harvest a bear statewide was 23.9 days in 2014, compared to 24.9 days in 2013. Baiting was the most common hunting method used to harvest bears, although hunters using dogs had greater hunting success than hunters using bait only. Statewide, about 51% of hunters rated their hunting experience as very good or good in 2014 (versus 53% in 2013).

INTRODUCTION

Beginning in 1990, the Michigan Department of Natural Resources (DNR) created black bear (*Ursus americanus*) management units and limited the number of bear hunting licenses issued for each unit. Before 1990, an unlimited number of bear licenses were available, and licenses were valid in all areas open to bear hunting. In 2000, the DNR modified the licensing system by implementing a zone and quota system based on preference points for issuing bear hunting licenses. Under this system, hunters received one preference point if they applied for a hunt but were unsuccessful in the drawing. Hunters also could obtain a preference point by completing an application but forgoing the drawing. Applicants with the greatest number of preference points had the greatest chance of being drawn for a hunt, but no more than 2% of the licenses were issued to nonresidents.

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In 2014, ten bear management units in Michigan, totaling about 35,360 square miles, were open for bear hunting (Figure 1). Hunters could pursue bears from September 10-October 26 in all of the Upper Peninsula (UP) units, except the Drummond Island Management Unit (September 10-October 21). Hunters could pursue bears from September 12-27 in Benzie, Leelanau, Grand Traverse, and part of Kalkaska counties and during September 19-27 for remaining counties in the Northern Lower Peninsula (LP) units. The first day of hunt periods in the LP (September 19) was restricted to hunting with bait only, and the last two days of the hunt periods in the LP (September 26-27) were restricted to hunters using dogs. In addition, the first day of the Baldwin North Area season (Sept. 12) was for bait-only hunting. The Red Oak Management Unit in the LP also had an archery-only hunt during October 3-9 (firearms and crossbows prohibited).

The number of bear hunting licenses available in the state in 2014 (license quota) was reduced 1 percent from 2013. Although the statewide quota changed little between the last two years, the quota for the Red Oak Unit declined 10% (from 750 to 675 licenses) between 2013 and 2014.

Hunters had to be at least 10 years old to purchase a hunting license. Licenses were valid on all land ownership types and allowed a hunter to take one bear of either sex, excluding cubs and female bears with cubs. Hunters could harvest bears with a firearm, crossbow, or archery equipment, except for the special archery-only hunt in the Red Oak Management Unit. Youth 10 to 13 years old could hunt with a firearm on private land only. Youth 14 years old and older could hunt with a firearm on private or public land. Hunters could use bait or dogs to hunt bears (except dogs could not be used during September 5-14 in the UP, excluding the Drummond Island Management Unit, September 14-19 in the Red Oak, Baldwin, and Gladwin units, September 7-12 in the Baldwin North Area, and during the archery-only season [October 3-9] in the Red Oak Management Unit).

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. Individuals could purchase an unlimited number of applications for the PMH. Three winners, selected by random draw, received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The bear hunting licenses were valid for all areas open for hunting bear, except Drummond Island, and during all bear hunting periods. Furthermore, the PMH license holder could hunt any bear season until they filled their bear harvest tag.

The DNR and Natural Resources Commission (NRC) have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys. The DNR and NRC use estimates derived from harvest surveys, as well as harvest reported by hunters at mandatory registration stations, and other indices to monitor bear populations and establish harvest regulations.

METHODS

The DNR provided all bear hunters the option to report information about their bear hunting activity voluntarily via an internet survey. The DNR notified hunters of the internet questionnaire by sending an email message to all license buyers that had provided an email address and by posting the questionnaire on the DNR website. Hunters reported whether they hunted, number of days spent afield, whether they harvested a bear, date of harvest, and their hunting methods. Hunters also reported whether other hunters (including bear hunters) caused interference during their hunt. The questionnaire asked successful hunters to report harvest date, sex of the bear taken, and harvest method. Finally, the questionnaire asked hunters to report how satisfied they were with the number of bear seen, number of opportunities they had to take a bear, and their overall bear hunting experience. Following the 2014 bear hunting season, a questionnaire (Appendix A) was mailed to 3,212 randomly selected people (Table 1) that had purchased a bear hunting license (resident, senior, nonresident bear licenses, comprehensive lifetime bear license, and Pure Michigan Hunt) and had not already voluntarily reported harvest information via the internet. The questionnaire sent via mail asked the same questions as the internet version.

We calculated parameter estimates using a stratified random sampling design that included 12 strata (Cochran 1977). We stratified hunters based on the management unit where their license was valid (10 management units). We considered hunters who purchased a license valid in multiple management units (PMH license holders) as a separate stratum (stratum 11). In addition, we treated hunters that had voluntarily reported information about their hunting activity via the internet as a separate stratum (stratum 12). We calculated the statewide estimate of the mean number of days required to harvest a bear using a different ratio for each stratum (i.e., separate ratio estimator). To improve the precision of ratio estimates, we used the number of bears registered in each stratum as an auxiliary variate.

We calculated a 95% confidence limit (CL) for each parameter estimate. In theory, we can determine the 95% confidence interval by adding and subtracting the CL from the estimate. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, we did not adjust the estimates for these possible biases.

Statistical tests determine the likelihood that the differences among estimates are larger than expected by chance alone. To determine whether estimates differed, we examined the respective 95% confidence intervals for overlapping values. Non-overlapping 95% confidence intervals was equivalent to stating that the difference between the means was larger than would be expected 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

We initially mailed questionnaires during late November 2014, and sent up to two follow-up questionnaires to nonrespondents. Of the 3,212 questionnaires mailed, 37 were undeliverable, resulting in an adjusted sample size of 3,175. We received questionnaires from

2,306 people, yielding a 73% adjusted response rate. In addition, 355 people voluntarily reported information about their hunting activity via the internet before we selected the random sample.

RESULTS

In 2014, hunters purchased 6,082 bear hunting licenses (Table 1), which was about 2% lower than 2013 (6,217). Most of the hunters buying a license in 2014 were men (90%), and the average age of the license buyers was 49 years (Figure 2). About 4% of the license buyers (244) were younger than 17 years old.

Compared to 10 years ago, the number of people buying a bear hunting license in 2014 decreased 35% (9,295 people purchased a license in 2004). Although the overall number of license buyers decreased, there were increased hunter numbers among the youngest and oldest age classes in 2014 (Figure 3). The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. The increased participation among the youngest hunters likely reflected the lowering of the minimum age requirements. In 2014, hunters had to be at least 10 years old to participate; while the hunters had to be at least 12 years old to participate in 2004.

Nearly 90 ± 1% of the license buyers hunted bear (Table 2). These hunters spent 37,257 days afield ($\bar{x}$ = 6.8 days/hunter) and harvested 1,552 bears. The number of hunters and hunting effort decreased significantly from 2013 to 2014 (declined 2% and 6%, respectively), but the overall harvest was not significantly different between 2013 and 2014 (Figure 4). Baraga, Marquette, and Ontonagon counties had the greatest number of bear hunters, and these three counties also had the greatest number of bears harvested during 2014 (Table 3).

The average number of days required to harvest a bear statewide was 23.9 days in 2014 (Table 2, Figure 5), which was not significantly different from 2013 (24.9 days). Mean effort per harvested bear did not change significantly in the UP or the LP between 2013 and 2014 (Figure 6). Long-term trends are difficult to interpret because of changes to hunting season's length, and the addition of hunt periods and areas open to hunting since 1992; thus, these annual estimates are not directly comparable. In 1994, most early hunt periods were increased from 37 to 42 days and a third hunt period was added in the Gwinn Management Unit. In 1995, a third hunt period was added in the Baraga Management Unit. In 1996, Baldwin and Gladwin management units were created, and a third period was added to Bergland, Amasa, Carney, and Newberry management units. In 2002, the units in the LP were expanded slightly to coincide with county boundaries. In 2006, the area of the Bladwin Unit was increased slightly with the addition of Leelanau County. The units having the highest effort per harvested bear during recent years have been Carney, Gladwin, Gwinn, and Newberry management units, while Amasa, Baldwin, Drummond Island, and Red Oak management units have had the lowest effort per harvested bear (Figure 7).

About 38% of the bear hunters hunted on private lands only in 2014, 43% hunted on public lands only, and 17% hunted on both private and public lands (Table 4). Bear hunters spent 14,187 days afield on private land, 14,760 days hunting on public land only, and 8,061 days

hunting on both private and public lands (Table 5). Of the estimated 1,552 bear harvested in 2014, hunters harvested 41 ± 3% of these bears (635 ± 54) on private land. Hunters harvested about 59 ± 3% of the bears (909 ± 67) on public land.

Based on reported harvest dates, hunters took about 24% of these bears during the first five days and 52% during the first ten days of the hunting season (Figure 8). Of the bears harvested and their sex known, 62 ± 3% were males (962 ± 68) and 38 ± 3% were females (589 ± 54; Table 6). Statewide, 28% of hunters harvested a bear in 2014, the same success rate as 2013 (Table 2). Hunter success ranged from 17-100% among the bear management units (Table 2).

Most hunters (85%) used firearms while hunting bear, although 14% of the hunters used archery equipment (compound, recurve, or long bows), and 8% used a crossbow (Tables 7 and 8). Most hunters (85%) used a firearm to harvest their bear, while 11% used archery equipment, and 3% used a crossbow (Tables 9 and 10).

Most hunters (85 ± 1%) relied primarily on baiting only as a means of locating and attracting bears (Table 11). About 11% (±1%) of hunters relied primarily on dogs alone or a combination of baiting and dogs to locate bears. About 2% of hunters relied on a hunting method not involving dogs or bait.

Hunters harvested about 82 ± 2% of the bears with the aid of bait only (Table 12). Hunting success for hunters using bait only was 28 ± 2%, while hunting success for hunters using dogs was 37 ± 5% in 2014. Success among hunters using dogs has usually been greater than among hunters using baits only (Figure 9).

About 33% of bear hunters statewide rated the number of bear seen during the 2014 hunting season as very good or good, and 42% rated bear seen as poor or very poor (Table 13). Similarly, about 28% of hunters statewide rated the number of chances they had to take a bear during the 2014 hunting season as very good or good, and 43% rated their chances as poor or very poor (Table 14).

Statewide, about 51% of hunters rated their hunting experiences as very good or good (versus 53% in 2013), and 26% rated their hunting experiences as poor or very poor (Table 15). Many factors may affect hunter satisfaction, including hunting success and whether anyone interfered with their hunting activities (Figure 10). In 2014, 18% of the hunters reported that other hunters interfered with their hunts (Table 16). Other bear hunters accounted for most of the interference reported; 13% of the hunters reported that other bear hunters interfered with their hunt. Generally, hunters in the UP experienced less interference than hunters in the LP (Table 16, Figure 11).

Only 12% of the hunters (662 hunters) hired a hunting guide in 2014 (Table 17). Furthermore, most hunting guides (80 ± 3%) relied on baiting only to locate bears for their clients in 2014 (Table 18).

ACKNOWLEDGEMENTS

I thank all the bear hunters that provided information. Theresa Riebow completed data entry. Sangeetha Katthury developed the internet harvest reporting application. Marshall Strong prepared the figure of bear management units and the area open to hunting. Dean Beyer, Russ Mason, Doug Reeves, and Kevin Swanson reviewed a previous version of this report.

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Frawley, B. J. 2001. 2000 Michigan black bear hunter survey. Wildlife Division Report 3334. Michigan Department of Natural Resources, Lansing, USA.

Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? Journal of Insect Science 3:34.

Figure 1. Bear management units open to hunting in Michigan, 2014.

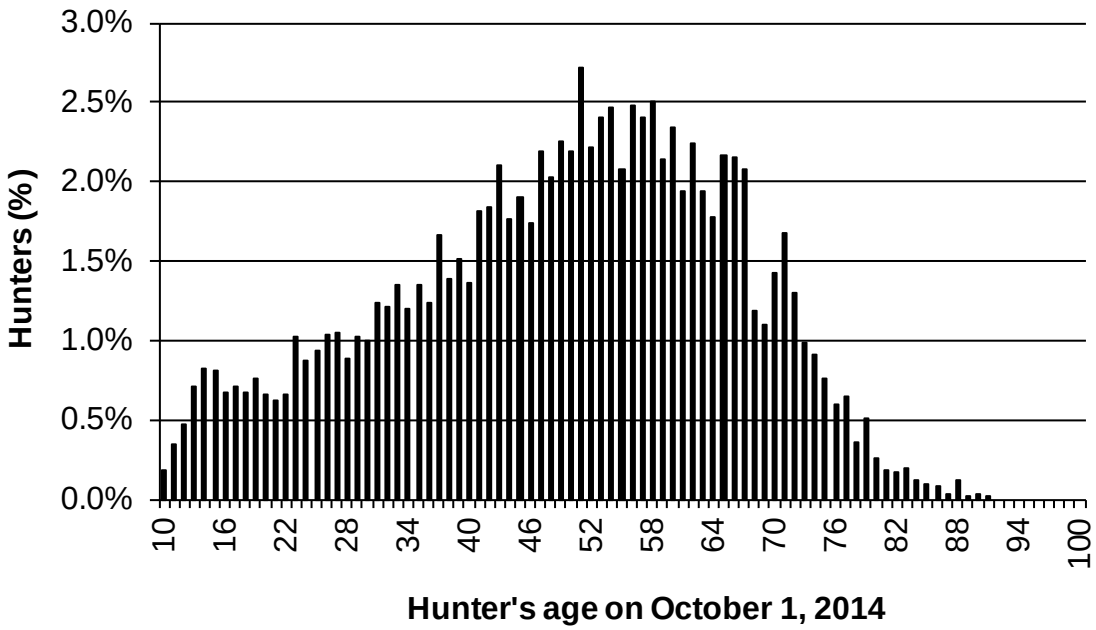

Figure 2. Age of people that purchased a bear hunting license in Michigan for the 2014 hunting season ($\bar{x}$ = 49 years). Licenses were purchased by 6,082 people.

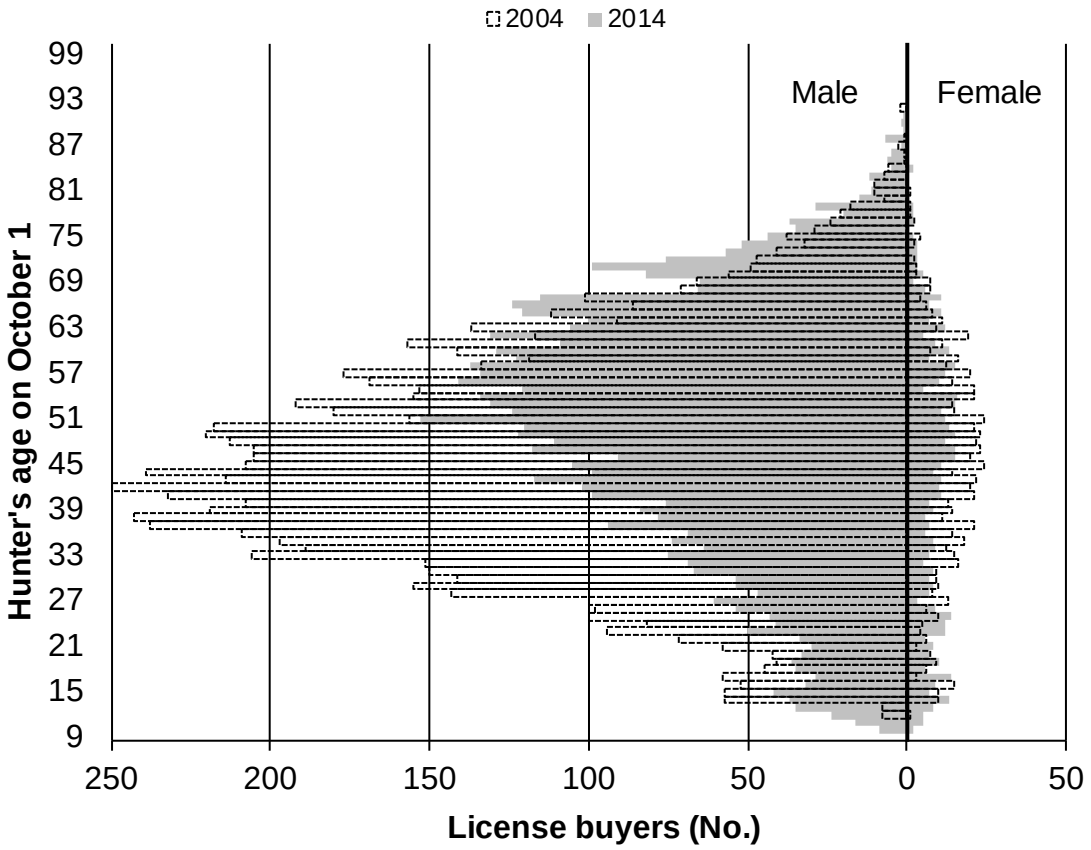

Figure 3. Number of bear hunting license buyers in Michigan by age and sex during 2004 and 2014 hunting seasons. The number of people buying a license was 9,295 in 2004 and 6,082 in 2014.

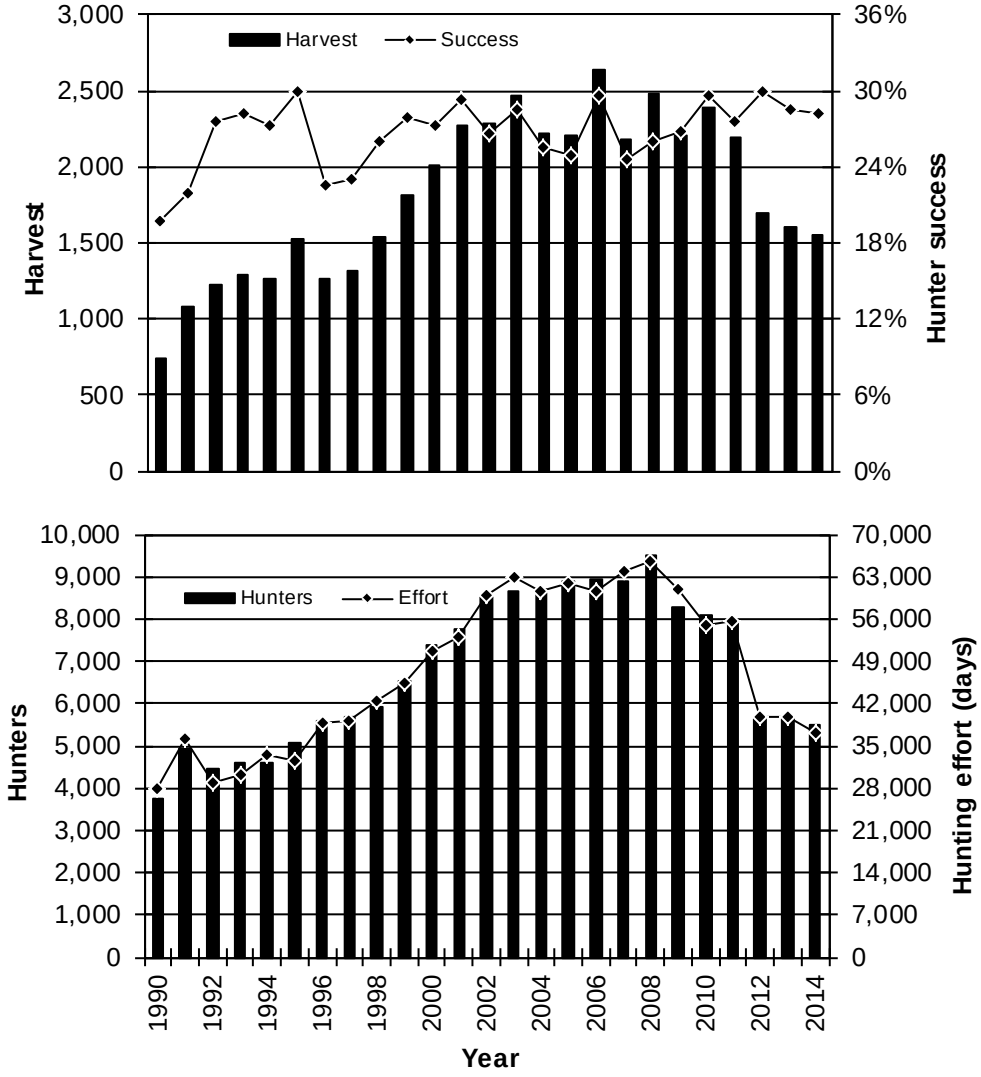

Figure 4. Estimated harvest, hunting success, number of hunters, and hunting effort during bear hunting seasons, 1990-2014.

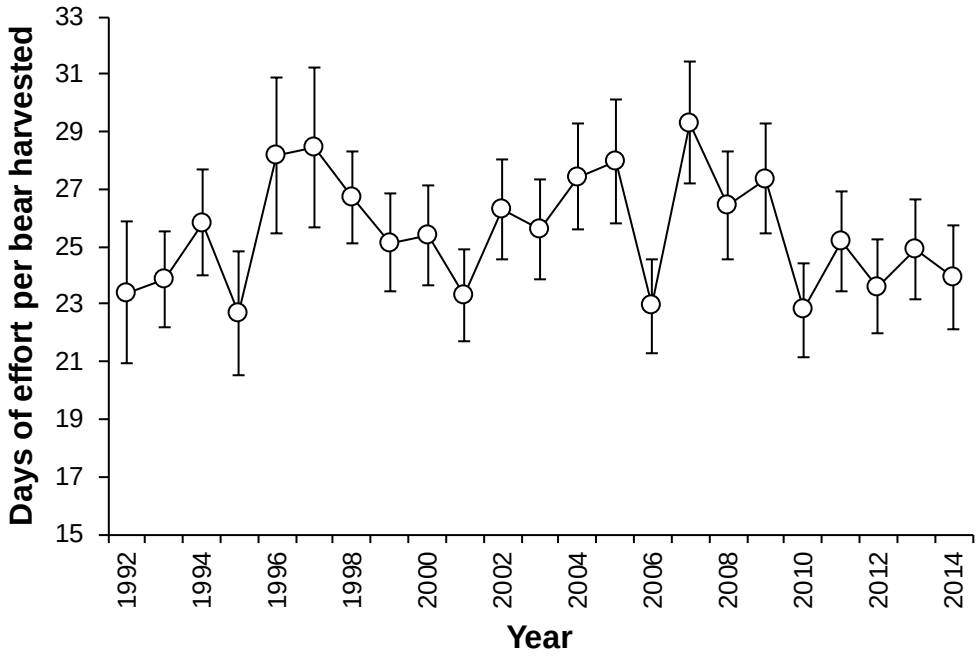

Figure 5. Estimated mean number of days required to harvest a bear statewide in Michigan during 1992-2014. Vertical bars represent the 95% confidence interval.

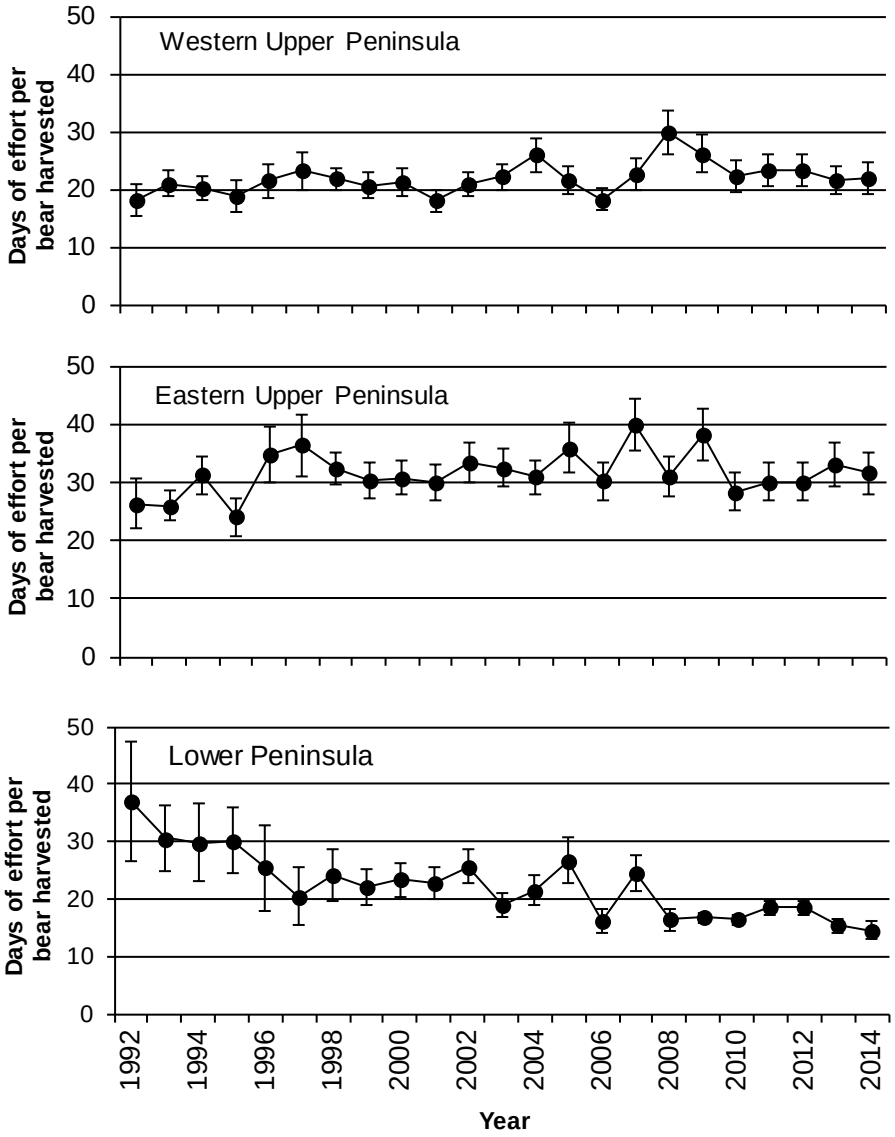

Figure 6. Estimated mean number of days required to harvest a bear in Michigan during 1992-2014, summarized by ecological region. Western UP consisted of Amasa, Baraga, and Bergland units, and Eastern UP consisted of Carney, Gwinn, and Newberry units (Drummond Island Management Unit excluded). Lower Peninsula consisted of Baldwin, Gladwin, and Red Oak management units. Vertical bars represent the 95% confidence interval.

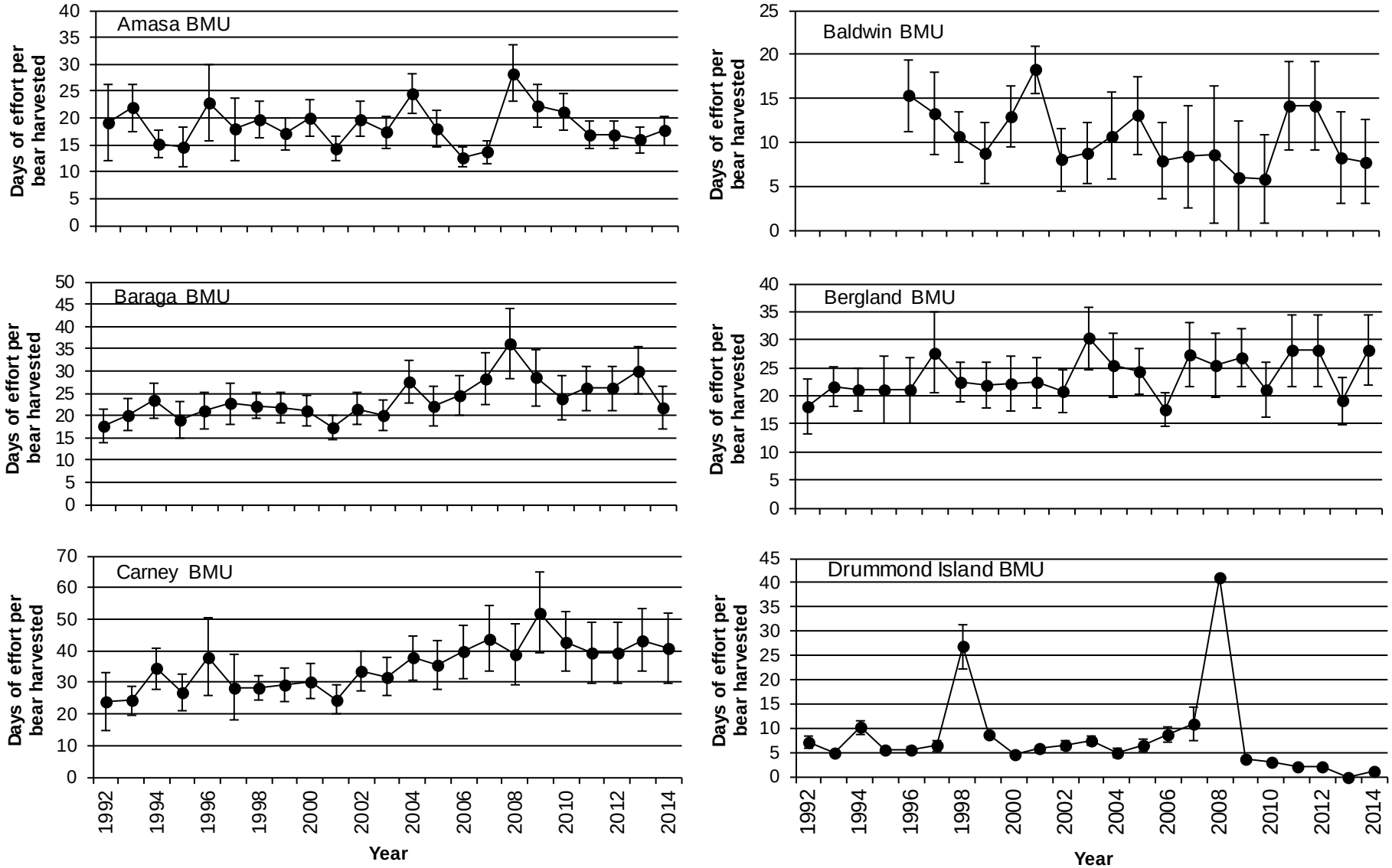

Figure 7. Estimated mean number of days required to harvest a bear in Michigan during 1992-2014, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

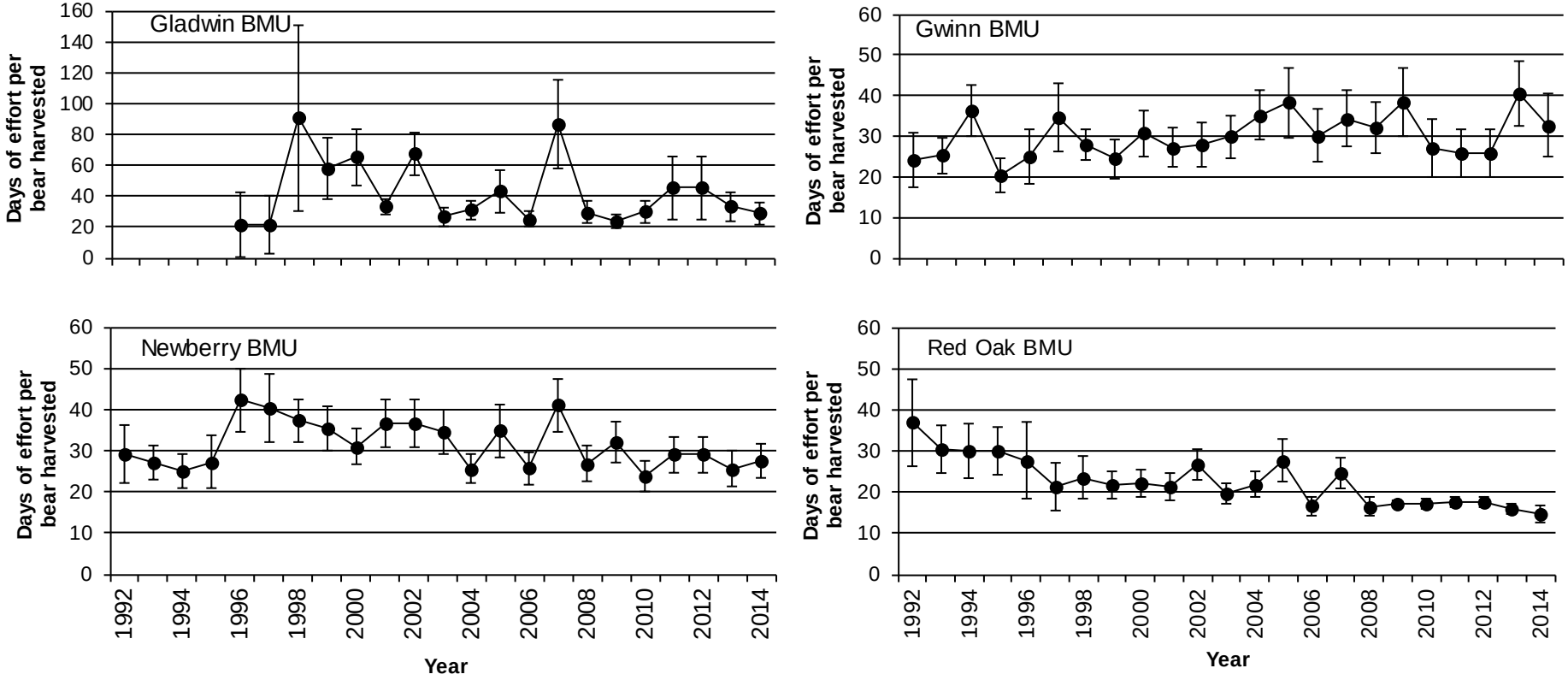

Figure 7 (continued). Estimated mean number of days required to harvest a bear in Michigan during 1992-2014, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

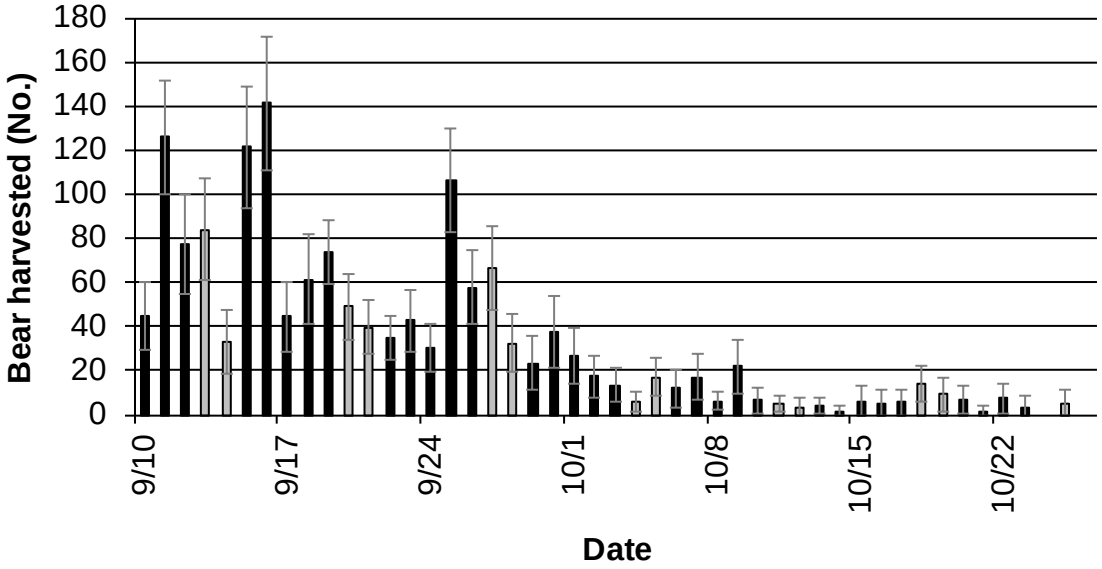

Figure 8. Estimated number of bear harvested by date during the 2014 bear hunting season (includes all hunt periods). Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval. The opening of the bear hunting season was September 10 in the UP and September 19 in the LP. Hunting with dogs in the UP started on September 15.

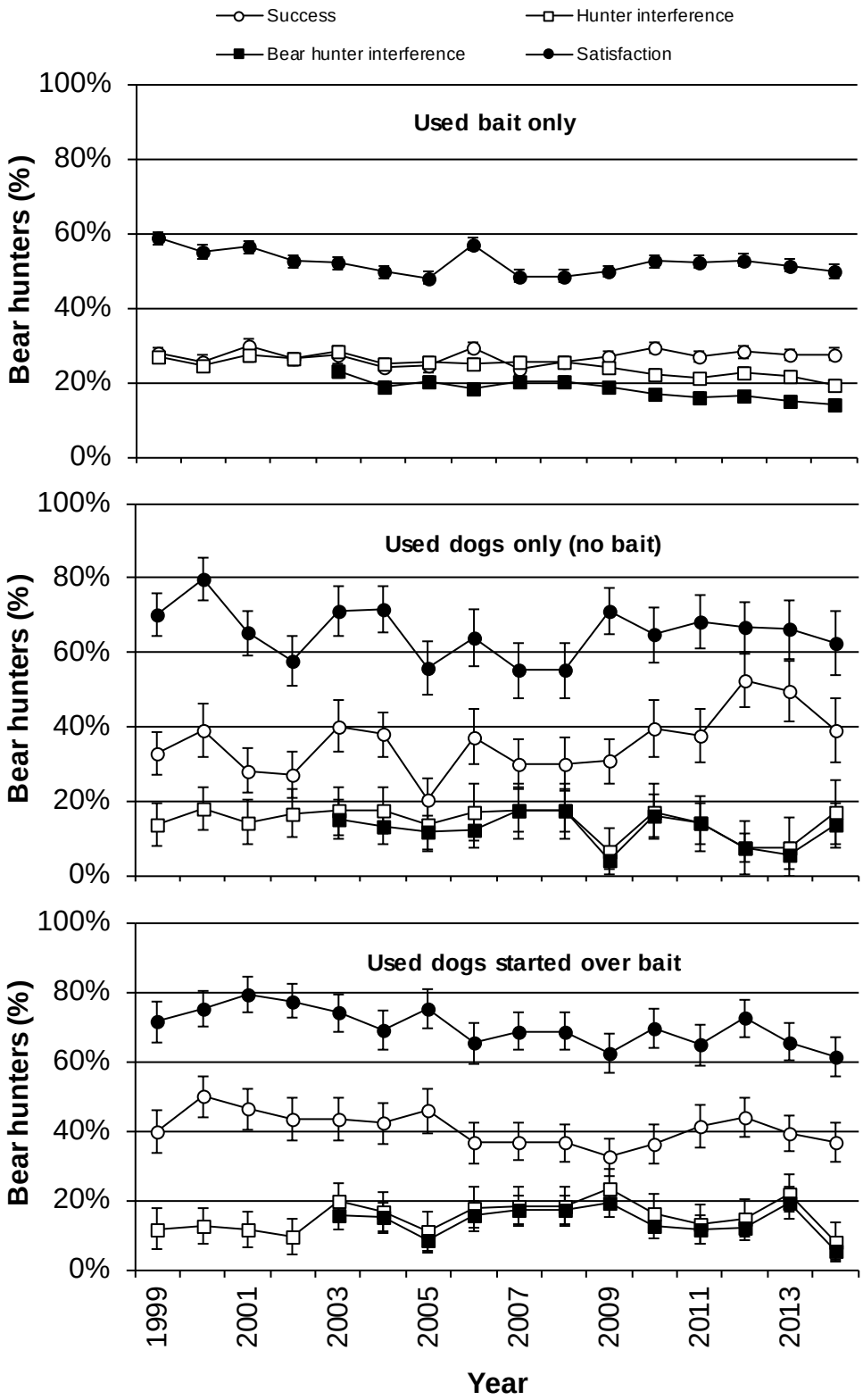

Figure 9. Estimated hunter success, interference, and satisfaction of bear hunters with their hunting experience in Michigan during 1999-2014, summarized by primary method of hunt. Vertical bars represent the 95% confidence interval. Interference was the proportion of hunters indicating they experienced interference from other hunters. Satisfaction was the proportion of hunters rating their hunting experience as very good or good.

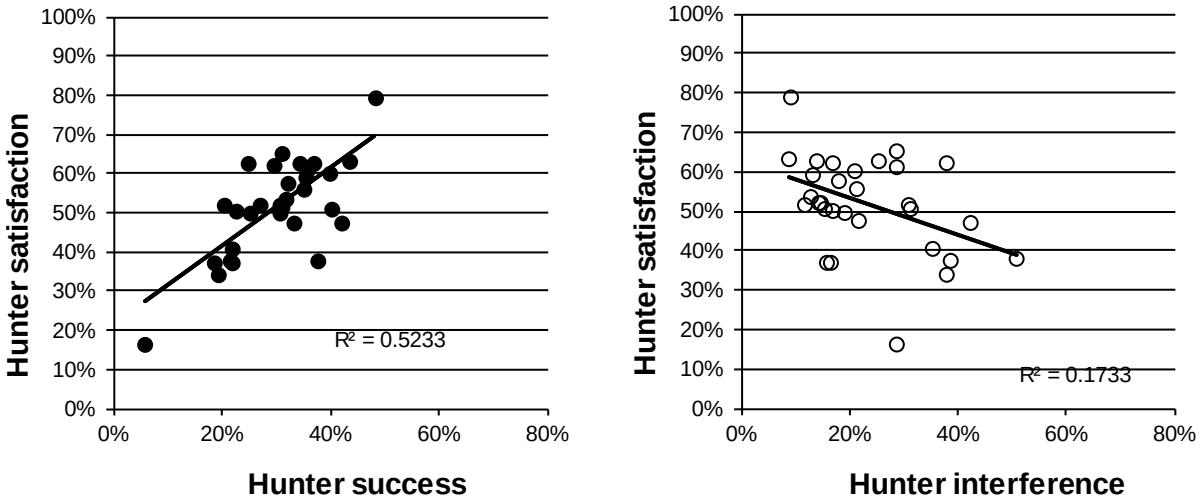

Figure 10. Hunter satisfaction (hunters rating their hunting experience as very good or good) relative to hunter success and hunter interference for 30 counties in Michigan during the 2014 bear hunting season (included only counties with at least 20 hunters). Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

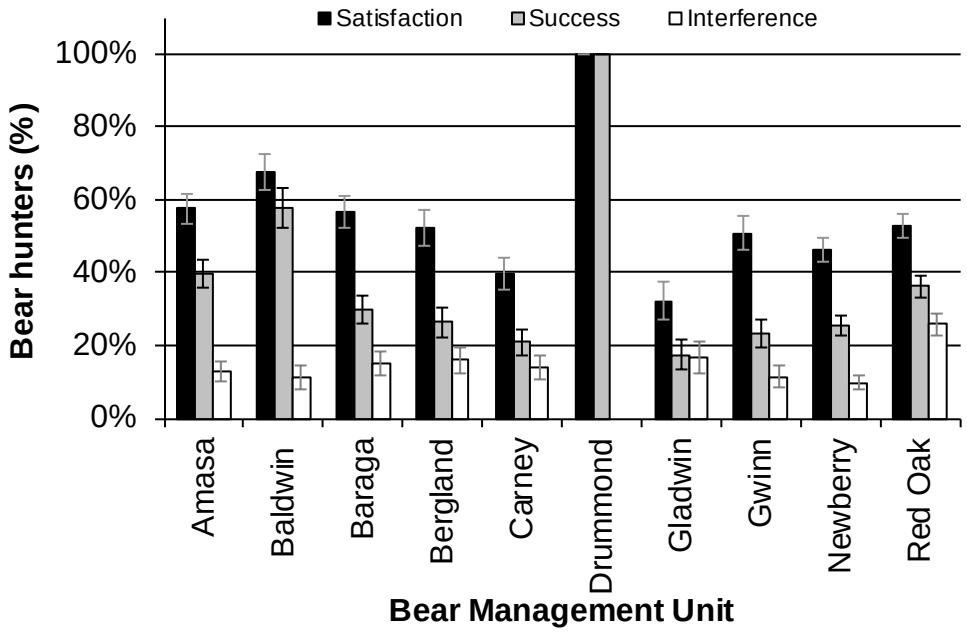

Figure 11. Estimated hunter satisfaction, hunting success, and level of hunter interference in Michigan's bear management units during the 2014 bear hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Error bars represent the 95% confidence limit. Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

Table 1. Number of people purchasing hunting licenses for the 2014 Michigan bear hunting seasons and number of people selected for survey sample.

Management unit	Licenses available (quota)	Number of eligible applicants[a]	Licenses sold[b]	Number of people included in mail survey sample[c]
Amasa	505	2,037	432	292
Baldwin	70	2,375	63	53
Baraga	1,620	3,296	1,218	482
Bergland	1,265	1,870	997	441
Carney	815	1,753	559	337
Drummond Island	1	162	1	0
Gladwin	110	864	94	87
Gwinn	1,250	2,581	904	432
Newberry	1,520	5,811	1,211	658
Red Oak	675	9,402	600	430
Pure Michigan Hunt	3	NA	3	292
Statewide	7,834	30,151	6,082	53
Applicants opting for Preference Point[d]		18,731		

[a]Number of eligible applicants selecting the management unit as their first choice to hunt.
[b]Fewer licenses were sold than the number available because some successful applicants failed to purchase a license.
[c]An additional 355 hunters responded on the internet before the mail sample was selected; these internet responders were used in the calculating survey estimates.
[d]Applicants that chose to receive a preference point rather than enter into the drawing for a hunting license.

Table 2. Estimated number of hunters, harvest, hunter success, hunting effort, mean days hunted, and mean effort per harvested bear during the 2014 Michigan bear hunting season.

	Hunters		Harvest		Hunter success		Hunting effort		Days hunted per hunter ($\bar{x}$)		Days hunted per harvested bear ($\bar{x}$)	
Manage-ment Unit	No.	95% CL[a]	No.	95% CL[a]	%	95% CL[a]	Days	95% CL[a]	Days	95% CL[a]	Days	95% CL[a]
Amasa	419	6	167	17	40	4	2,813	221	6.7	0.5	16.9	2.4
Baldwin	62	1	36	3	58	6	291	19	4.7	0.3	8.2	1.0
Baraga	1,137	26	340	46	30	4	7,291	621	6.4	0.5	21.4	4.3
Bergland	818	34	215	36	26	4	5,884	554	7.2	0.6	27.3	5.8
Carney	479	17	100	18	21	4	4,036	392	8.4	0.8	40.3	10.0
Drummond Is.	1	0	1	0	100	0	1	0	1.0	0.0	1.0	0.0
Gladwin	86	3	15	4	17	4	409	28	4.7	0.3	27.5	6.5
Gwinn	831	23	194	34	23	4	6,123	555	7.4	0.6	31.5	7.1
Newberry	1,100	23	280	33	25	3	7,555	523	6.9	0.5	27.0	3.8
Red Oak	567	9	205	18	36	3	2,847	159	5.0	0.3	13.9	1.7
Pure MI Hunt	1	0	0	0	0	0	7	0	7.0	0.0	0.0	0.0
Statewide[b]	5,500	57	1,552	81	28	1	37,257	1,226	6.8	0.2	23.9	1.8

[a]95% confidence limits.

[b]Column totals may not equal statewide totals because of rounding error.

Table 3. Estimated number of hunters, harvest, hunter success, hunting effort, hunter satisfaction, and hunt interference during the 2014 Michigan bear hunting season.

	Hunters[a]		Harvest[a]		Hunter success		Hunting effort (days)[a]		Hunter satisfaction[b]		Interfered hunters[c]	
County	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Alcona	99	14	40	10	40	8	378	73	51	8	31	7
Alger	216	35	53	18	25	7	1,493	320	63	8	14	6
Alpena	48	11	17	6	35	11	256	67	59	11	13	8
Antrim	6	4	2	2	28	29	35	36	28	29	16	10
Arenac	1	1	0	0	0	0	9	9	0	0	0	0
Baraga	626	53	191	37	30	5	3,572	456	52	6	15	4
Bay	0	0	0	0	0	0	0	0	0	0	0	0
Benzie	5	2	5	2	100	0	20	8	100	0	26	19
Charlevoix	4	3	2	2	39	36	30	19	78	16	61	36
Cheboygan	33	10	7	4	22	11	163	64	41	15	35	13
Chippewa	232	30	77	19	33	7	1,651	317	48	7	22	6
Clare	19	4	5	2	27	11	82	20	39	12	54	12
Crawford	21	7	6	4	29	16	94	36	62	17	38	17
Delta	267	38	71	22	27	7	1,734	379	52	8	14	6
Dickinson	197	31	60	18	31	8	1,450	307	50	8	17	6
Emmet	15	6	3	3	23	18	76	36	23	18	52	19
Gladwin	44	5	8	3	19	6	191	26	34	7	38	8

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good or good.
[c]Proportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2014 Michigan bear hunting season.

	Hunters[a]		Harvest[a]		Hunter success		Hunting effort (days)[a]		Hunter satisfaction[b]		Interfered hunters[c]	
County	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Gogebic	343	41	127	28	37	7	2,259	408	63	7	17	5
Gd. Traverse	2	1	2	1	100	0	22	14	50	30	50	30
Houghton	222	40	69	24	31	9	1,507	400	65	9	28	9
Iosco	6	3	3	2	47	29	9	7	47	29	60	25
Iron	276	19	120	15	43	5	1,808	216	63	5	9	3
Isabella	0	0	0	0	0	0	0	0	0	0	0	0
Kalkaska	33	9	14	6	42	15	148	57	47	15	42	15
Keweenaw	87	27	27	16	31	15	705	314	52	16	12	10
Lake	18	7	5	2	26	12	74	34	39	16	53	19
Leelanau	0	0	0	0	0	0	0	0	0	0	0	0
Luce	323	35	73	18	23	5	2,111	308	51	6	15	5
Mackinac	162	27	36	13	22	7	1,280	295	37	9	16	7
Manistee	9	3	6	2	71	15	27	10	86	11	29	15
Marquette	521	54	131	29	25	5	3,856	578	50	6	19	5
Mason	2	1	0	0	0	0	9	6	100	0	100	0
Mecosta	0	0	0	0	0	0	0	0	0	0	0	0
Menominee	299	25	56	14	19	4	2,602	341	37	6	15	4

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good or good.
[c]Proportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2014 Michigan bear hunting season.

	Hunters[a]		Harvest[a]		Hunter success		Hunting effort (days)[a]		Hunter satisfaction[b]		Interfered hunters[c]	
County	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	%	95% CL
Midland	1	1	0	0	0	0	6	6	0	0	100	0
Missaukee	37	10	8	4	21	11	174	57	38	13	51	14
Montmorency	86	15	31	9	36	9	408	95	61	9	29	8
Muskegon	0	0	0	0	0	0	0	0	0	0	0	0
Newaygo	17	4	3	1	20	8	85	26	65	12	48	13
Oceana	2	1	0	0	0	0	11	8	100	0	100	0
Ogemaw	25	8	10	5	40	16	134	56	60	16	21	14
Ontonagon	411	49	131	30	32	6	2,907	482	54	7	13	4
Osceola	21	4	1	1	6	5	101	24	17	7	29	10
Oscoda	44	13	15	6	34	13	246	94	63	14	25	13
Otsego	30	9	14	5	48	15	150	57	79	12	9	7
Presque Isle	58	12	20	7	35	10	318	79	56	10	21	8
Roscommon	63	14	13	5	20	8	289	75	52	11	31	11
Schoolcraft	222	31	71	18	32	7	1,529	305	58	7	18	6
Wexford	37	9	14	3	38	11	141	46	38	11	38	13
Unreported	505	53	3	5	1	1	3,105	414	33	5	21	4

[a]Number of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.
[b]Proportion of hunters that rated their hunting experience as very good or good.
[c]Proportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the 2014 bear hunting season.

	Land type															
	Private land only				Public land only				Both private and public lands				Unknown land			
Management unit	Total	95 % CL	%	95 % CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Amasa	151	17	36	4	190	17	45	4	77	13	18	3	2	2	0	1
Baldwin	26	3	43	6	25	3	40	5	10	2	17	4	0	0	0	0
Baraga	336	46	30	4	542	51	48	4	226	40	20	4	34	17	3	2
Bergland	193	34	24	4	429	43	53	5	177	33	22	4	18	12	2	1
Carney	292	24	61	4	124	20	26	4	58	14	12	3	4	4	1	1
Drummond Is.	0	0	0	0	1	0	100	0	0	0	0	0	0	0	0	0
Gladwin	43	5	50	6	32	5	37	5	11	3	13	4	0	0	0	0
Gwinn	333	40	40	5	330	40	40	5	153	31	18	4	15	11	2	1
Newberry	422	37	38	3	506	39	46	3	160	27	15	2	12	8	1	1
Red Oak	318	20	56	3	182	18	32	3	65	12	12	2	2	2	0	0
Pure MI Hunt	0	0	0	0	1	0	100	0	0	0	0	0	0	0	0	0
Statewide	2,114	87	38	2	2,361	93	43	2	937	71	17	1	87	26	2	0

Table 5. Estimated number of days of hunting effort on private and public lands during the 2014 Michigan bear hunting season.

Management unit	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Amasa	1,175	203	1,069	152	569	133	0	0
Baldwin	107	17	128	18	56	19	0	0
Baraga	2,147	413	3,317	468	1,696	470	132	138
Bergland	1,261	285	3,080	462	1,494	410	49	43
Carney	2,518	334	842	182	670	264	6	9
Drummond Is.	0	0	1	0	0	0	0	0
Gladwin	214	28	142	27	53	18	0	0
Gwinn	2,356	400	2,079	384	1,669	450	18	21
Newberry	2,911	370	3,165	364	1,447	366	31	33
Red Oak	1,499	135	929	127	407	92	12	16
Pure MI Hunt	0	0	7	0	0	0	0	0
Statewide[a]	14,187	849	14,760	886	8,061	906	249	151

[a]Column totals may not equal statewide totals because of rounding errors.

Table 6. Number of applicants, licenses sold, estimated number of hunters, harvest, hunting effort (days), and hunting success during Michigan bear hunting seasons, 2008-2014.

	Year						
Region	2008	2009	2010	2011	2012	2013	2014
Upper Peninsula							
Applicants	23,206	23,086	22,370	20,175	18,880	18,776	17,510
Licenses sold	8,195	7,260	7,786	7,813	5,323	5,408	5,322
Hunters	7,625	6,664	6,975	6,808	4,782	4,871	4,784
Harvest	1,948	1,759	2,046	1,873	1,376	1,350	1,297
Males (%)	59	62	57	61	59	60	63
Females (%)	40	38	42	39	41	40	36
Unknown (%)	1	1	0	0	0	0	0
Hunter-days	56,531	53,197	49,329	49,627	35,348	35,847	33,702
Hunter success (%)	26	26	29	28	29	28	27
Lower Peninsula							
Applicants	15,386	16,020	14,855	13,644	13,224	13,169	12,641
Licenses sold	1,983	1,693	1,187	1,204	900	806	757
Hunters	1,888	1,592	1,122	1,141	860	754	715
Harvest	528	451	347	313	314	252	256
Males (%)	58	54	54	59	49	55	55
Females (%)	40	46	46	40	51	45	45
Unknown (%)	1	0	0	0	0	0	0
Hunter-days	8,984	7,697	5,791	5,862	4,385	3,851	3,548
Hunter success (%)	28	28	31	27	37	33	36
Statewide							
Applicants[a]	38,592	39,106	37,225	33,819	32,104	31,945	30,151
Licenses sold[b]	55,458	56,772	54,937	51,621	51,152	51,715	48,882
Hunters	10,178	8,953	8,976	9,020	6,226	6,217	6,082
Harvest	9,512	8,256	8,097	7,949	5,643	5,626	5,499
Males (%)	2,476	2,210	2,393	2,187	1,690	1,602	1,552
Females (%)	59	60	57	61	57	59	62
Unknown (%)	40	40	43	39	43	41	38
Hunter-days	1	0	0	0	0	0	0
Hunter success (%)	65,516	60,894	55,120	55,489	39,733	39,699	37,250

[a]Number of applicants statewide included people that applied for a preference point.
[b]Number of license sold statewide included people that received Pure Michigan Hunt licenses, which were valid in both the UP and LP.

Table 7. Estimated proportion of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2014.

	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
Management unit	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	80	3	13	3	11	3	1	1
Baldwin	92	3	11	3	2	2	0	0
Baraga	82	3	15	3	10	3	1	1
Bergland	81	4	16	4	9	3	1	1
Carney	84	3	14	3	7	2	1	1
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	82	4	17	4	2	1	0	0
Gwinn	88	3	11	3	9	3	0	1
Newberry	90	2	10	2	6	2	0	0
Red Oak	87	2	26	3	8	2	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide[a]	85	1	14	1	8	1	0	0

[a]Row totals equal more than 100% because hunters could use more than one type of equipment during season.

Table 8. Estimated number of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2014.

	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
Management unit	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	337	14	53	11	47	11	4	3
Baldwin	57	2	7	2	1	1	0	0
Baraga	929	44	171	36	111	30	7	8
Bergland	660	41	130	29	71	22	6	7
Carney	400	22	67	15	35	12	6	5
Drummond Is.	1	0	0	0	0	0	0	0
Gladwin	71	4	14	4	1	1	0	0
Gwinn	728	33	94	25	72	23	3	5
Newberry	988	31	107	22	61	17	0	0
Red Oak	496	15	146	17	44	10	0	0
Pure MI Hunt	1	0	0	0	0	0	0	0
Statewide[a]	4,667	81	790	62	443	51	26	13

[a]Row totals equal more than the estimated number of hunters in the unit because hunters could use more than one type of equipment during season.

Table 9. Estimated proportion of bears harvested by firearms, crossbows, and archery equipment during the 2014 bear hunting season in Michigan.

	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
Management unit	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	84	5	11	4	5	3	0	0
Baldwin	93	4	7	4	0	0	0	0
Baraga	79	6	13	5	7	4	1	2
Bergland	85	7	15	7	0	0	0	0
Carney	86	7	11	6	3	3	0	0
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	91	8	9	8	0	0	0	0
Gwinn	87	7	8	5	4	4	2	3
Newberry	89	4	9	4	1	1	1	1
Red Oak	87	4	10	3	2	2	1	1
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	85	2	11	2	3	1	1	1

Table 10. Estimated number of bears harvested during the 2014 bear hunting season in Michigan, summarized by hunting equipment used to take the bear.

	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
Management unit	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	141	16	18	7	8	5	0	0
Baldwin	33	3	2	1	0	0	0	0
Baraga	269	42	46	20	22	14	3	6
Bergland	183	33	32	15	0	0	0	0
Carney	86	17	11	7	3	3	0	0
Drummond Is.	1	0	0	0	0	0	0	0
Gladwin	14	3	1	1	0	0	0	0
Gwinn	169	32	15	11	7	7	3	5
Newberry	249	31	26	11	2	4	2	4
Red Oak	178	18	20	7	4	3	2	2
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	1,323	76	172	32	47	17	11	9

Table 11. Primary hunting methods used to hunt bear in Michigan, 2014.

Method	Number of hunters	95% CL	Method used (%)
Bait only	4,673	81	
Dogs only	174	30	
Dogs and bait	456	51	
Other	116	27	
Unknown	80	22	

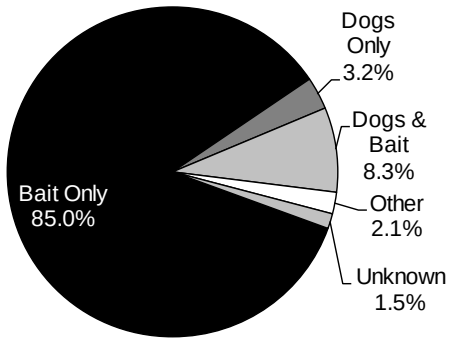

Table 12. Hunting methods used to harvest bear in Michigan, 2014.

Method	Number of hunters	95% CL	Method used (%)
Bait only	1,277	75	
Dogs only	81	20	
Dogs and bait	184	32	
Other	5	4	
Unknown	5	6	

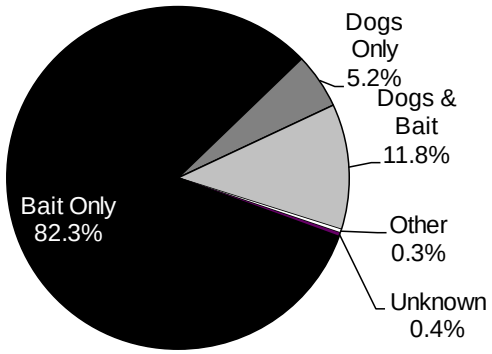

Table 13. Hunters' level of satisfaction with the number of bear seen during the 2014 bear hunting season.

	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
Management unit	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	44	4	16	3	33	4	7	2
Baldwin	60	5	15	4	22	4	2	2
Baraga	37	4	16	3	37	4	10	3
Bergland	31	4	13	3	43	5	13	3
Carney	30	4	9	3	48	5	12	3
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	25	5	9	3	53	6	14	4
Gwinn	31	4	20	4	39	5	10	3
Newberry	26	3	13	2	49	3	12	2
Red Oak	40	3	13	2	41	3	6	2
Pure MI Hunt	0	0	0	0	100	0	0	0
Statewide	33	2	15	1	42	2	10	1

Table 14. Hunters' level of satisfaction with the number of opportunities to take a bear during the 2014 bear hunting season.

	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
Management unit	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	38	4	15	3	34	4	13	3
Baldwin	47	6	12	4	38	5	4	2
Baraga	32	4	13	3	40	4	15	3
Bergland	24	4	13	3	44	5	18	4
Carney	23	4	11	3	49	5	17	4
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	13	4	10	3	56	6	20	4
Gwinn	27	4	17	4	42	5	14	3
Newberry	23	3	11	2	46	3	20	3
Red Oak	31	3	12	2	45	3	12	2
Pure MI Hunt	0	0	0	0	100	0	0	0
Statewide	28	1	13	1	43	2	16	1

Table 15. Hunters' level of satisfaction with overall bear hunting experience during the 2014 bear hunting season.

	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
Management unit	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	57	4	16	3	22	3	5	2
Baldwin	68	5	17	4	13	4	2	2
Baraga	57	4	18	3	20	3	6	2
Bergland	52	5	20	4	22	4	6	2
Carney	40	4	16	3	38	4	6	2
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	32	5	16	4	47	6	5	2
Gwinn	51	5	15	3	29	4	5	2
Newberry	46	3	20	3	30	3	5	1
Red Oak	53	3	13	2	29	3	5	2
Pure MI Hunt	0	0	0	0	100	0	0	0
Statewide	51	2	17	1	26	1	5	1

Table 16. Number and proportion of hunters that experienced interference with another hunter during the 2014 bear hunting season.

	Hunters interfered by other hunters (all types of hunters)				Hunters interfered by other bear hunters			
Management unit	%	95% CL	No.	95% CL	%	95% CL	No.	95% CL
Amasa	14	3	59	12	9	2	36	10
Baldwin	40	5	24	3	23	5	14	3
Baraga	17	3	191	38	13	3	149	34
Bergland	15	3	126	29	12	3	97	26
Carney	14	3	66	15	9	3	44	13
Drummond Is.	0	0	0	0	0	0	0	0
Gladwin	36	5	31	5	18	4	16	4
Gwinn	17	4	141	30	14	3	119	29
Newberry	19	3	204	29	16	2	171	27
Red Oak	29	3	163	17	17	3	96	14
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	18	1	1,007	69	13	1	742	62

Table 17. Number and proportion of hunters that used a hunting guide during the 2014 bear hunting season.

Management unit	%	95% CL	No.	95% CL
Amasa	15	3	64	12
Baldwin	23	5	14	3
Baraga	15	3	173	35
Bergland	14	3	113	27
Carney	6	2	27	10
Drummond Island	100	0	1	0
Gladwin	11	4	9	3
Gwinn	8	3	64	21
Newberry	14	2	155	26
Red Oak	7	2	41	10
Pure MI Hunt	100	0	1	0
Statewide	12	1	662	59

Table 18. Hunting methods used by guides to hunt bear in Michigan, 2014.

	Hunted over bait only		Used dogs only (no bait)		Used dogs started over bait		Used other method		Unknown method	
Management unit	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	46	11	0	0	11	5	2	2	6	3
Baldwin	13	3	0	0	1	0	0	0	0	0
Baraga	156	34	0	0	10	10	0	0	7	0
Bergland	105	27	0	0	0	0	0	0	7	5
Carney	18	8	6	5	2	3	0	0	1	0
Drummond Island	0	0	0	0	1	0	0	0	0	0
Gladwin	5	2	1	1	3	2	0	0	0	0
Gwinn	55	20	0	0	9	8	0	0	0	0
Newberry	113	23	10	7	14	9	0	0	19	7
Red Oak	19	7	9	5	7	4	0	0	5	3
Pure MI Hunt	0	0	0	0	0	0	0	0	1	0
Statewide	530	55	26	10	59	17	2	2	46	10

Appendix A

2014 Michigan Bear Harvest Questionnaire

MICHIGAN DEPARTMENT OF NATURAL RESOURCES – WILDLIFE
PO BOX 30030 LANSING MI 48909-7530

2014 MICHIGAN BEAR HARVEST REPORT

This information is requested under authority of Part 435, 1994 PA 451, M.C.L. 324.43539.

It is important that you complete and return this report even if you did not hunt or harvest a bear. If you want to provide your answers via the internet, visit our website at https://secure1.state.mi.us/wildlifesurveys/bear.aspx.

1. Did you hunt bear in Michigan during the 2014 season?

[1] ☐ Yes [2] ☐ No; (If you select "No", you are finished. Please return the survey.)

2. Please report the number of days for each county that you hunted bear in the following table.

COUNTY HUNTED (*List each county that you hunted for bear; for example, Marquette County*)	**NUMBER OF DAYS HUNTED**	**TYPE OF LAND**
		[1] ☐ Private [2] ☐ Public [3] ☐ Both
		[1] ☐ Private [2] ☐ Public [3] ☐ Both
		[1] ☐ Private [2] ☐ Public [3] ☐ Both
		[1] ☐ Private [2] ☐ Public [3] ☐ Both
		[1] ☐ Private [2] ☐ Public [3] ☐ Both

3. Did you hunt with a firearm, crossbow, or bow during the 2014 bear season? *(select all that apply)*

[1] ☐ Firearm [2] ☐ Crossbow [3] ☐ Bow (recurve, compound, or long bow)

4. What hunting method did you use most often when hunting bear in Michigan during the 2014 bear season? (P*lease select only one item.*)

[1] ☐ Hunted over bait only [2] ☐ Used dogs only (bait not used)

[3] ☐ Used dogs started over bait [4] ☐ Used other methods not involving dogs or bait

5. If you used bait to attract bears, what was the total number of gallons you used during the legal baiting and hunting periods? _____

Please write in gallons used.

6. At any time during the 2014 season, did you hire a guide's service to hunt bear in Michigan?

[1] ☐ Yes [2] ☐ No (*If no, please skip to question 8.)*

7. If yes, what hunting techniques were used most often by the guide? (P*lease select only one item.*)

[1] ☐ Hunted over bait only [2] ☐ Used dogs only (bait not used)

[3] ☐ Used dogs started over bait [4] ☐ Used other methods not involving dogs or bait

Please continue on back

8. Did you kill a bear and place your harvest tag on it?

[1] ☐ Yes [2] ☐ No (*If no, please skip to question 10.)*

9. If your harvest tag was put on a bear, please fill in the information below

a. What date was the bear harvested?
(*please check [X] the box for the date of harvest*)

September 2014						
S	M	T	W	T	F	S
			10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October 2014						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25

b. What was the sex of the bear?

[1] ☐ Male [2] ☐ Female [3] ☐ Not sure

c. In what county was it harvested? _____
please write in county name

d. On what type of land was the bear harvested?

[1] ☐ Private [2] ☐ Public

e. What weapon was used to harvest bear?

[1] ☐ Firearm [2] ☐ Crossbow [3] ☐ Bow (recurve, compound, or long bow)

f. What was the method of harvest?

[1] ☐ Taken over bait [2] ☐ Used dogs only (bait not used)

[3] ☐ Used dogs started over bait [4] ☐ Used other methods not involving dogs or bait

10. Did other hunters interfere with your bear hunting? [1] ☐ Yes [2] ☐ No *(Skip to question 12.)*

11. If you answered "yes" to the previous question, was the interference caused by other bear hunters? [1] ☐ Yes [2] ☐ No

12. How would you rate the following for your 2014 bear hunting season:
(Select one choice per item.)

	Very Good	Good	Neutral	Poor	Very Poor	Not Applicable
a. Number of bear you saw.	[1] ☐	[2] ☐	[3] ☐	[4] ☐	[5] ☐	[6] ☐
b. Number of opportunities you had to take a bear.	[1] ☐	[2] ☐	[3] ☐	[4] ☐	[5] ☐	[6] ☐
c. Your overall bear hunting experience.	[1] ☐	[2] ☐	[3] ☐	[4] ☐	[5] ☐	[6] ☐

Return the completed report in the enclosed postage-paid envelope. Thanks for your help.